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parenteral

Word:

Word

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- Adj. 1. **parenteral** - administered by means other than through the alimentary tract (as by intramuscular or **intravenous** injection)
medical specialty, medicine - the branches of medical science that deal with nonsurgical techniques
2. **parenteral** - located outside the alimentary tract
physiology - the branch of the biological sciences dealing with the functioning of organisms

Legend: [Synonyms](#) [Related Words](#) [Antonyms](#)

Some words with "parenteral" in the definition:

Calan	cefoperazone	cephalosporin	hyperalimentation	Primaxin
calcium blocker	cefotaxime	Claforan	Isoptin	total parenteral nutrition
calcium-channel blocker	ceftazidime	Fortaz	Mefoxin	TPN
Cefobid	ceftriaxone	hepatitis C	parenterally	

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parent	parental quality	parenterally	parenthetical
Parent cell	parentally	parenthesis	parenthetical expression
Parent nucleus	Parenlation	parenthesis-free notation	parenthetically
parentage	parented	Parenthesize	parenthood
parental	Parentele	parenthetic	Parenticide

Full Dictionary Browser

Parent process (enc.)	Parental Advisory (enc.)	Parenteral nutrition (med.)	parenthetical
Parent regiment (enc.)	Parental alienation (enc.)	Parenteral nutrition (enc.)	parenthetical expression
Parent Teacher Association (enc.)	Parental leave (enc.)	parenterally	parenthetically
Parent Teacher Student Association (enc.)	parental quality	Parentheses (comp.)	parenthood
Parent Trap (enc.)	Parental supervision (enc.)	Parentheses (enc.)	Parenti (enc.)
Parent-Teacher Association (enc.)	Parentalia (enc.)	Parenthesis	Parenticide
Parent-Teacher-Student Association (enc.)	parentally	Parenthesis (enc.)	Parenting (enc.)
Parentage	Parenlation	parenthesis-free notation	Parenting plan (enc.)
Parentage (law)	parented	Parenthesize	parentless
parental	Parentele	parenthetic	Parents (law)

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These terms only appear in links pointing to this page: **development**

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Opioid Adverse Effects

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Nonpharmacologic Pain Management Techniques

Barriers to Effective Pain Management

Opioid Adverse Effects

- Opioids have many possible **adverse effects**; some are common, some not
- Addiction (psychological dependence), **tolerance**, and physical dependence are **not** considered among the **adverse effects**
- The ethical considerations of "double effect" and unintended consequences of opioids and other medications is discussed in [Module 10: Common Physical Symptoms](#)
- **Adverse effects** should also be distinguished from **opioid allergy**
 - Many people believe that **opioid-induced**

nausea/vomiting, **constipation**, drowsiness, or even confusion is an allergic reaction

- However, these are not allergic reactions; they are **adverse effects**
- While one or more may present on initial dosing, **adverse effects** can be easily managed and patients generally develop pharmacologic **tolerance** to all but **constipation** within a relatively brief period
- Anaphylactic or true allergic reactions to opioids are rare
 - Urticaria and bronchospasm could be direct **opioid** effects or signs of allergy
 - Sudden onset of breathlessness or other signs of anaphylaxis should be taken very seriously, and the offending **opioid** replaced with another from a different class

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Common Adverse Effects

- **Constipation**
- **Dry Mouth**
- **Nausea/Vomiting**
- **Sedation**
- **Sweats**

Constipation

- **Constipation secondary to opioid administration is almost universal**
- It is primarily the result of **opioid** effects on the CNS, spinal cord, and myenteric plexus of gut that, in turn:
 - Reduce gut motor activity
 - Increase stool transit time
- The colon has more time to desiccate its contents, leaving large hard stools that are difficult to pass
- Other factors that may make the problem worse include:
 - Dehydration
 - Poor food intake
 - Other medications
- Prevention and management of **opioid**-related

constipation

- Tolerance to **constipation** may develop very slowly, if at all
- It requires anticipatory and ongoing management
- Dietary interventions alone (e.g., increase fluid and fiber) are often insufficient
- Bulk-forming agents (e.g., psyllium)
 - Require substantial fluid intake
 - Not recommended for those with advanced disease and poor mobility
- To counteract the slowing **effect** of opioids:
 - Start by prescribing a routine stimulant laxative (e.g., senna, bisacodyl, glycerine, casanthranol, etc)
 - Escalate the dose to **effect**
- While stool softeners (e.g., docusate sodium) are not usually effective by themselves, combination stimulant/softeners (e.g., senna + docusate sodium or calcium) can be useful
- Prokinetic agents (e.g., metoclopramide, cisapride, etc) may also significantly counteract the **opioid effect**
- If **constipation** persists, some patients will benefit from the addition of an osmotic agent, such as milk of magnesia, lactulose, or sorbitol, to increase the stool's moisture content
- If the **constipation** proves to be refractory to basic therapy, interventions that are more aggressive may be necessary (see Module 10: Common Physical Symptoms)

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Nausea, Vomiting

- Many patients starting opioids experience nausea with or without vomiting
 - Young women seem to be most at risk
- These symptoms:
 - Are easily anticipated and treated with antiemetics
 - Usually disappear as **tolerance** develops within a few

days

- Dopamine-blocking agents are most often effective
 - prochlorperazine 10 mg before opioid and q 6h
 - haloperidol 1 mg before opioid and q 6h
 - metoclopramide 10 mg before opioid and q 6h
- In refractory cases, a more aggressive approach or an alternative opioid may become necessary (see Module 10: Common Physical Symptoms)

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Typical Course and Resolution of Sedation

- Patients sometimes complain of feeling sedated or mentally clouded immediately after beginning an opioid analgesic
- Care must be taken to distinguish between:
 - True sedation (inability to fully wake up)
 - Exhaustion due to previous sleep deprivation with the unrelieved pain (sleeps a lot, but is able to fully wake up in between)
- Opioid-induced sedation usually disappears over a few days as tolerance develops
 - Most patients also catch up on their lost sleep over a week or two

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Sedation in Patients with Advanced Illness

- For patients with very advanced disease, mental clouding and excessive somnolence are often issues
- This is particularly true when patients have multiple concomitant medical conditions, medications, and declining function, even in the absence of opioid analgesics
- Pain may, in fact, be the primary stimulant keeping them alert
- Once pain is managed, the patient's "natural" level of sedation may become apparent

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Management of Sedation

- If sedation occurs:
 - Encourage patients and families to clearly articulate their goals (see Module 7: Goals of Care)
 - Develop a pain management plan that balances alertness and pain control to suit the individual
 - Some patients may prefer to be sleepy and comfortable
 - Others may prefer to be alert and in pain
- If undesired sedation persists:
 - A different opioid or an alternate route of administration may provide relief
 - Also, consider the use of a psychostimulant (e.g., methylphenidate 5 mg q am and q noon and titrate), particularly if the opioid is providing effective analgesia

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Uncommon Adverse Effects

- Bad Dreams/Hallucinations
- Dysphoria/Delirium
- Myoclonus/Seizures
- Pruritus/Urticaria
- Respiratory Depression
- Urinary Retention

Dysphoria/Delirium

- Delirium due to opioid excess may be suggested with the onset of:
 - Confusion
 - Bad dreams
 - Hallucinations
 - Restlessness
 - Agitation
 - Myoclonic jerks
 - Significantly depressed level of consciousness
 - Seizures
- Opioid-induced delirium rarely occurs when:
 - Opioid dosing guidelines are followed closely
 - Patients have normal renal clearance

- However, one or more of these **adverse** effects may present:
 - Gradually, in the patient who is not passing much urine and is accumulating **opioid** due to decreased intake or dehydration
 - Rapidly, in the patient who is developing sepsis
- For more information, see Module 6: Depression, Anxiety, Delirium

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Pruritus/Urticaria

- In some patients, opioids produce urticaria or pruritus
- These effects are the result of mast cell destabilization by the **opioid** and subsequent histamine release
- Usually the rash and pruritus can be managed by routine administration of long-acting, nonsedating antihistamines while **opioid** dosing continues
 - fexofenadine 60 mg po bid
 - diphenhydramine, loratadine, or doxepin 10-30 mg po qhs

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Common Myths about the Respiratory Depression with Opioid Use

Myth #1: The risk of respiratory depression when using opioids to relieve pain is high

The Facts:

- The inappropriate application of animal and human models from acute pain research is in part responsible for this common fear
- Pain is a potent stimulus to breathe
- Pharmacologic **tolerance** to respiratory depression develops quickly
- Opioid effects are quite different from those experienced by a patient who is not in pain and receives similar doses

Myth #2: As doses increase, respiratory depression can occur

suddenly in the absence of overdose

The Facts:

- Somnolence always precedes respiratory depression
- Adequate ongoing assessment and appropriate titration of opioids based on pharmacological principles will prevent misadventures
- Patient-controlled analgesia with an appropriate dosing interval (10-15 minutes if iv, 30 minutes if sc) can be used safely, because the patient who takes too many extra doses of opioid will fall asleep and stop pushing the button before respiratory depression occurs

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Management of Respiratory Depression

- If respirations are compromised (< 6/minute), naloxone may be necessary if it is the goal of care to keep the patient alert while treating the underlying cause
 - Dilute 0.4 mg of naloxone to 10 mL with sterile water
 - Administer 0.1 to 0.2 mg IV q 1 to 2 min until the patient is alert
 - As the effective plasma half-life is short (10 to 15 min) due to naloxone's high affinity for lipids, monitor the patient closely every few minutes for recurrent drowsiness
 - If drowsiness recurs, repeat dosing as required until the patient is no longer compromised
- If delirium due to opioid excess does occur, but respirations are not compromised (> 6/minute):
 - Routine opioids may be stopped
 - Treat the underlying cause of the adverse effects until they abate:
 - Ensure appropriate hydration
 - Manage sepsis

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Nonpharmacologic Pain Management Techniques

- While pharmacologic approaches may be the mainstay of pain management, physicians should consider all available therapies as they develop an individual's plan of care
- Many patients have realized significant relief through:
 - Neurostimulatory techniques
 - TENS (transcutaneous electrical nerve stimulation)
 - acupuncture
 - Physical therapy
 - therapeutic exercises
 - heat and cold
 - Psychological approaches
 - cognitive therapies
 - relaxation, imagery, hypnosis
 - biofeedback
 - behavior therapy
 - psychotherapy
 - Art or music therapy
 - Massage, body work, etc
- Members of the interdisciplinary team, who may be more familiar with nonpharmacologic interventions, can frequently assist the physician to identify and refer patients appropriately

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Barriers to Effective Pain Management

- Today, pain management remains inadequate in spite of the fact that we have possessed information discussed in this module for over 20 years
- While this inadequacy may reflect inadequate knowledge, it also reflects barriers to pain relief that are pervasive and (in some cases) institutional
- To become effective, we need to overcome real or perceived barriers, including:
 - Beliefs by physicians and other professionals that pain management is not important
 - Poor assessment techniques
 - Inadequate dissemination of the available knowledge
 - Unfounded fear of addiction, **tolerance**, and **adverse effects**
 - Inappropriate regulatory oversight

- To be effective, individual care plans must:
 - Encourage patients to report their pain freely
 - Take into account each patient's willingness to take medication, or not
- In addition to adequate knowledge, health care systems and institutions may need to change in order to facilitate the implementation of the knowledge

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